Deep Learning

homework

Course name : Deep Learning

Course id : 14448_001

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Major : Electircal Engineering

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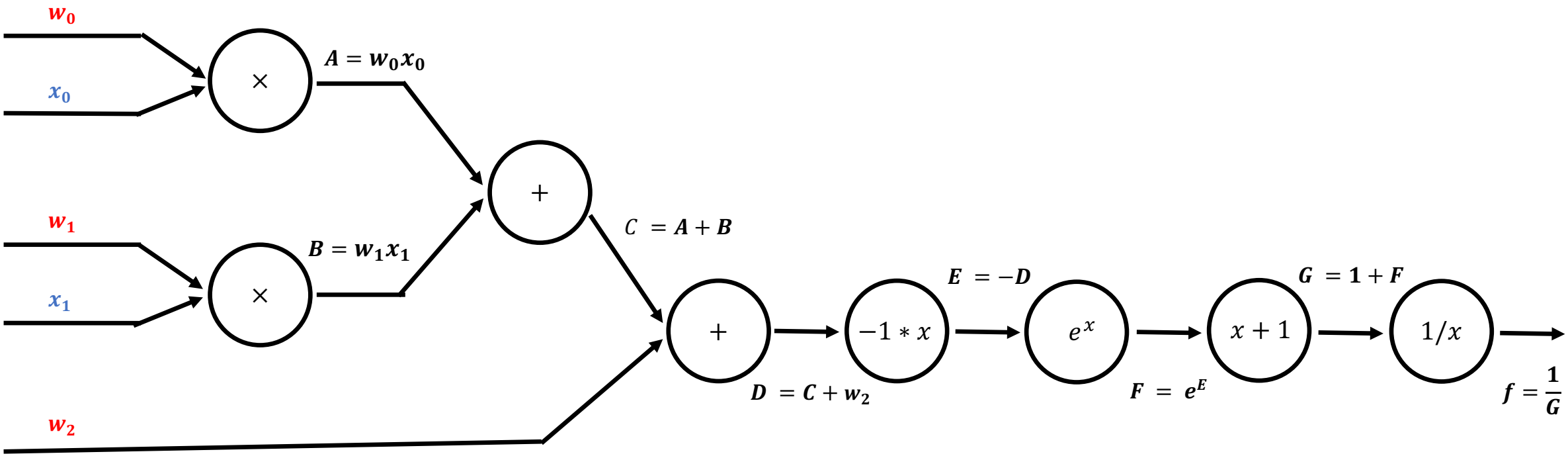
Step1. Computational Graph

$$C = f^2, \qquad f = \frac{1}{1 + e^{-(w_0 x_0 + w_1 x_1 + w_2)}}$$

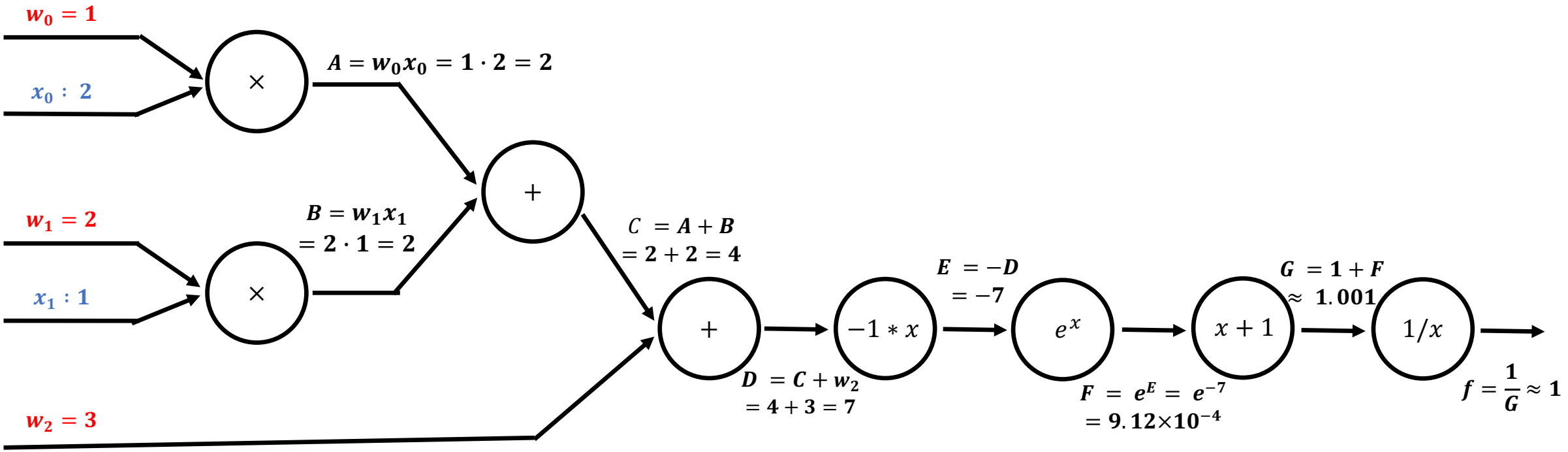
$$f = \frac{1}{1 + e^{-(A + B + w_2)}} = \frac{1}{1 + e^{-(C + w_2)}} = \frac{1}{1 + e^{-D}} = \frac{1}{1 + e^{E}} = \frac{1}{1 + F} = \frac{1}{G}$$



Step2. Feed Forward

$$C = f^2, \qquad f = \frac{1}{1 + e^{-(w_0 x_0 + w_1 x_1 + w_2)}}$$

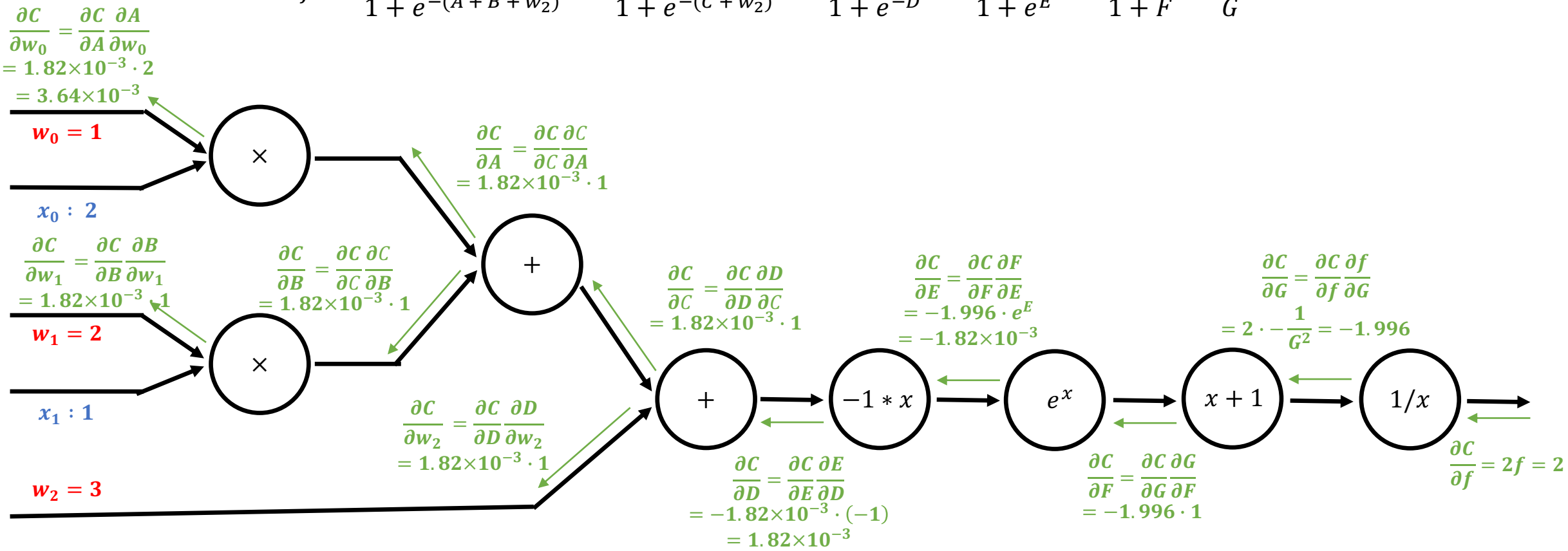
$$f = \frac{1}{1 + e^{-(A + B + w_2)}} = \frac{1}{1 + e^{-(C + w_2)}} = \frac{1}{1 + e^{-D}} = \frac{1}{1 + e^{E}} = \frac{1}{1 + F} = \frac{1}{G}$$



Step3. Obtain Derivatives

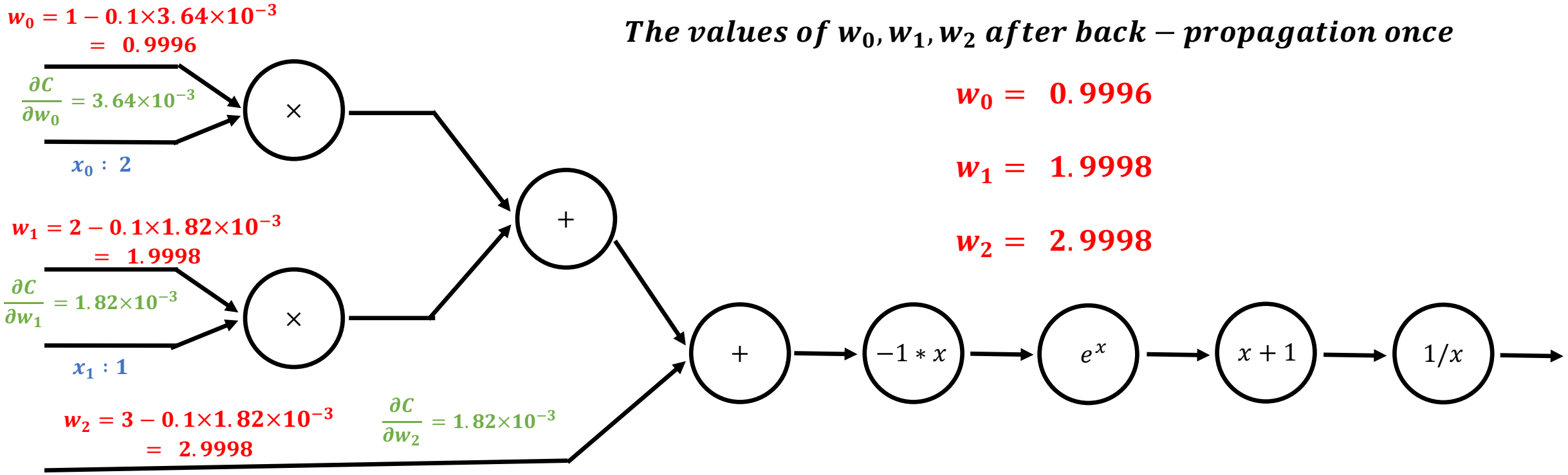
$$C = f^2, \qquad f = \frac{1}{1 + e^{-(w_0 x_0 + w_1 x_1 + w_2)}}$$

$$f = \frac{1}{1 + e^{-(A + B + w_2)}} = \frac{1}{1 + e^{-(C + w_2)}} = \frac{1}{1 + e^{-D}} = \frac{1}{1 + e^{E}} = \frac{1}{1 + F} = \frac{1}{G}$$



Step4. Update Parameters

$$w_i := w_i - \alpha \frac{\partial f}{\partial w_i}, \qquad \alpha = 0.1$$



The values of w_0, w_1, w_2 after back − propagation once

$w_0 = 0.9996$

$w_1 = 1.9998$

$w_2 = 2.9998$